

AMENDMENTS TO THE CLAIMS

1 - 67. (Cancelled)

68. (Currently Amended) A semiconductor wafer etching system, comprising: a reaction chamber, a segmented shower head, means for introducing an etchant gas into the reaction chamber through the shower head, means for independently controlling the flow of gas through different segments of the shower head to adjust the etch rates in different areas of a wafer corresponding to the different segments, means for measuring the thickness of the wafer in the different areas, and means for adjusting the flow of gas through the segments in accordance with the thickness measurements to produce a wafer of predetermined thickness and uniformity.

69. (Previously Added) The system of Claim 68 including means for increasing the flow of etchant gas to at least one of the segments to provide an increased etch rate in the corresponding area(s) of the wafer.

70. (Previously Added) The system of Claim 68 including means for adding a diluent or etching suppressant gas to the processing gas to decrease the etch rate in at least one section of the wafer.

71. (Previously Added) The system of Claim 68 including means for adding a diluent or etching suppressant to the processing gas, and means for decreasing the flow of etchant gas through at least one of the segments to provide a decreased etch rate in the corresponding area(s) of the wafer.

72. (Previously Added) The system of Claim 68 including means for interrupting the gas flow through at least one of the segments to provide a decreased etch rate in the corresponding area(s) of the wafer.

73. (Previously Added) A semiconductor wafer etching system, comprising: a reaction chamber, a segmented shower head, means for introducing an etching gas into the reaction chamber through the shower head, means for independently controlling the flow of the etching gas through different segments of the shower head to adjust the etch rates in areas of a wafer corresponding to the different segments, means for measuring the thickness of the wafer in the different areas after only a portion of the material has been removed in order to determine the effectiveness of the current flow rates on etch uniformity, and means for adjusting the flow of gas through the segments

in accordance with the thickness measurements to control the etch rates in the different areas.

74. (Currently Amended) A semiconductor wafer etching system, comprising: a reaction chamber, a segmented shower head, means for introducing an etching gas into the reaction chamber through the shower head, means for independently controlling the flow of the etching gas through different segments of the shower head to adjust the etch rates in different areas of a wafer corresponding to the different segments, means for measuring the thickness of the wafer in the different areas after etching is complete to determine the effectiveness of the flow rates on etch uniformity, and means for adjusting the flow rates in the different areas in accordance with the measured thicknesses for use on subsequent wafers.

75 - 81. (Cancelled)

82. (Previously Added) A system for etching substrates, comprising:
a gas supply;
a gas injector showerhead in the form of an electrode for a capacitive RF discharge for etching substrates;

the showerhead having a plurality of interior compartments which are individually supplied with gas(es) from the supply, substantially isolated from each other, and distributed within the showerhead to cover a total area corresponding to and roughly covering that of the substrate, with each of interior compartments communicating with and supplying gas(es) to a discharge volume through a plurality of small holes;

every compartment within the showerhead being connected to a line which can supply it with a fixed proportion, relative to all other compartments, of the total flow of etching process gas(es), with the etching process gas(es) being the sole supply of etching species and being complete in enabling the etching process to be performed, and the proportion of the etching gas(es) flowing to each compartment not being variable by automatic means or easily changed;

a subset of the compartments in the showerhead also being individually connected by leak-tight gas lines to controllable supplies of a gas or gases which are not the same as the process gases, and which either accelerate or decelerate the rate of an RF discharge-based process which is using the etching process gas(es).

83. (Previously Added) The system of Claim 82 where the maximum allowed flow to any compartment of accelerant or decelerant gas(es) is less than about 20% of the flow to that compartment of the etching process gas(es).

84. (Previously Added) The system of Claim 82 wherein the total of the flows of all accelerant or decelerant gases to all compartments is less than or about 20% of the total flow to all compartments of the etching process gas(es).

85. (Previously Added) The system of Claim 82 wherein the accelerant gas flow to any compartment of the showerhead is less than or about 10% of the total flow of etching process gas(es) to that compartment.

86. (Previously Added) The system of Claim 82 wherein the decelerant gas flow to any compartment of the showerhead is less than or about 10% of the total flow of etching process gas(es) to that compartment.

87. (Previously Added) A system for etching substrates, comprising:
a gas injector showerhead in the form of an electrode for a capacitive RF discharge for etching substrates having a plurality of interior compartments which are individually supplied with gas(es), substantially isolated from each other, and distributed within the showerhead to cover a total area corresponding to and roughly covering that of the substrate, with each of interior compartments communicating with and supplying gas(es) to a discharge volume through a plurality of small holes;

every compartment within the showerhead being connected to a line which can supply it with a fixed proportion, relative to all other compartments, of the total flow of etching process gas(es), with the etching process gas(es) being the sole supply of etching species and being complete in enabling the etching process to be performed, and the proportion of the etching gas(es) flowing to each compartment not being variable by automatic means or easily changed;

a subset of the compartments in the showerhead also being individually connected by leak-tight gas lines to controllable supplies of a gas or gases which are not the same as the process gases, and which either accelerate or decelerate the rate of an RF discharge-based process which is using the etching process gas(es).

88. (Currently Amended) The system of Claim 87 where the maximum allowed flow to any compartment of accelerant or decelerant gas(es) to any compartment is less than about 20% of the flow of the etching process gas.

89. (Previously Added) The system of Claim 87 wherein the total of the flows of all accelerant or decelerant gases to all compartments is less than or about 20% of the total flow to all compartments of the etching process gas.

90. (Previously Added) The showerhead of Claim 87 wherein the accelerant gas flow to any compartment of the showerhead is less than or about 10% of the flow of etching gases to that compartment.

91. (Previously Added) The system of Claim 87 wherein the decelerant gas flow to any compartment of the showerhead is less than or about 10% of the total flow of etching gases to that compartment.